



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/509,431

07/27/2005

Rob Short

P-7715

7450

32752

7590

06/23/2009

David W. Highet, VP & Chief IP Counsel  
Becton, Dickinson and Company  
(Hoffman & Baron)  
1 Becton Drive, MC 110  
Franklin Lakes, NJ 07417-1880

EXAMINER

PADGETT, MARIANNE L

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

06/23/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/509,431	<b>Applicant(s)</b> SHORT ET AL.	
	<b>Examiner</b> MARIANNE L. PADGETT	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2/23/2009 & 3/18/2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 41-77 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 41-77 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/18/9</u> .  | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 1792

1. Applicants' amendment of 2/23/2009 that has rewritten all the claims, corrects many 112 issues & objections, as set forth in sections 1 & 3 of the action mailed 11/21/2008. The examiner notes that applicants' cited support in the PGPub in paragraphs [0016-17], [0019] & [0021] have relevant sections corresponding to page 5, lines 14-25, page 6, line 7-15 & 20-21 in the original specification in the application file, of which the PGPub is not part. Applicant's citations & discussion of "non-uniform", which in present independent claim 41 is employed to describe "non-uniform characteristics" of the plasma polymer deposit, which is selected from heterogeneous chemically &/or heterogeneous physically, where the examiner further notes that with consideration of the discussion in the specification, heterogeneous chemically is considered to include any surface or bulk material having functional groups, hence for a plasma polymerized surface will include any plasma polymerized deposition with functional groups on the surface & within the deposit., as well and has more classically patterned deposits (i.e. changing material deposited &/or only selectively deposited in some locations, etc.). With respect to "heterogeneous physically", given references to structural micropatterns & molecular architectures in any preceding paragraph on the save page on which this term is introduced to the specification, heterogeneous physically will be considered to encompass both macroscopic & microscopic nonuniformity down to the molecular level.

The examiner notes that page 10, lines 10-16, original claims 2-3, and figure 1, provide support for the relative movement limitations in the claims as amended, even considering the confusion in meaning of claim 41's terminology, as discussed below.

2. **Claims 41-77** are rejected under 35 U.S.C. **112, second** paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In independent **claim 41**, lines 2-3, applicants have claimed "using at least one organic compound **monomer** as a **source of plasma**" (emphasis added), however the examiner is unclear how exactly any

Art Unit: 1792

organic monomer can be said to be "a source of plasma", i.e. to cause plasma! While organic compound monomers are conventionally employed as **source gases** to be used in plasma deposition processes, such as those that produce plasma polymerization, the gas itself cannot properly be said to be the source of plasma, thus this limitation as presently written is illogical in that it is technically virtually impossible. While it may represent a sort of shorthand description or jargon, such is not appropriate in claim language, which should clearly set forth what is actually being done.

Analogously, given that monomer gas cannot actually cause plasma, but has been defined as "a source of plasma", it is uncertain in lines 4-5, whether the intent of "moving... the source of plasma", should be read as moving the source of the monomer (i.e. probably gas or vaporize liquid), or as moving a real plasma source, such as an electrode configuration or the like, which could incidentally move the plasma gas containing the monomer & species thereof, along with it. For purposes of examination over art for the claims as presently written, either option will be considered. Also note that as organic compound monomers have been defined as "a source of plasma", and since the types of plasmas that may be used for plasma polymerization are gaseous, in gas molecules move around inherently, any organic compound monomer which may be considered "a source of plasma" in the context of the claims as written, will inherently be moving, such that as **presently claimed** any plasma polymer deposition techniques would appear to read on moving the source of plasma = organic compound monomers relative to the substrate on which plasma polymerization is occurring.

Use of **relative terms** that **lack** clear metes and bounds in the claims, or **lack** a clear definition in the specification or in relevant cited prior art (i.e. commensurate in scope with claim language), remains vague and indefinite. Relative terms include: "volatile", as used in **claims 47-51 & 53**, noting virtually **any material** is "volatile" dependent on conditions that cause evaporation or sublimation (i.e. any alcohol is volatile under at least some condition, any acid..., etc.), hence as employed in the claims "volatile" is either a meaningless verbose adjective, or intended to represent some unclear scope of alcohol containing

Art Unit: 1792

monomers, etc. Applicants' arguments have not explained how using a relative adjective in front of a generic type of compound makes it any less relative. Note that a compound being claimed as volatile, does not mean that it is ever volatilized anytime in the process, since claiming an ability, especially one that is relative to conditions employed, does not necessitate any action.

**Claim 46** as written is ambiguous, since "the heterogeneous surface" refers back to that term's introduction in independent claim 1's preamble that states "preparing a heterogeneous surface on a substrate...", such that "the heterogeneous surface" is the result of depositing the plasma polymer, therefore the phrasing "the plasma polymer deposit on the heterogeneous surface" appears to require the surface to be heterogeneous before the polymer is even deposited, which is illogical, or ambiguously perhaps the intent was --wherein the heterogeneous surface of the plasma polymer deposit is heterogeneous physically--, a subtle, but important difference in phrasing. I

3. The **disclosure remains objected** to because of the following informalities: the examiner notes applicants' intent on page 11 of the 2/23/2009 response to address these issues in the future, if necessary.

Proofreading remains needed, for example, on page 2, line 10, there are inappropriate spaces between parts of what is probably intended to be a single US patent number; or such as found on page 9, lines 7, 8, 16, 21 & 30, numerous uses of "eg" that are probably intended to be --e.g. --; or on page 21, line 28, the second pressure value lacks proper superscripting. This should not be considered a complete listing of issues for correction.

Appropriate correction is required.

4. **Claim 63 is objected** to because of the following informalities:

In claim 63, as this is a US patent, the American English spelling for "vapour", i.e. -- vapor --, should be employed.

Appropriate correction is required.

Art Unit: 1792

5. The **nonstatutory double patenting** rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

The following is a quotation of the appropriate paragraphs of **35 U.S.C. 102** that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of **35 U.S.C. 103(a)** which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1792

6. As noted by applicants, SN 11/269,427 has been abandoned & the present application claims relevant to SN 10/599,943 have been canceled, thus making of the ODP rejections with respect to these cases moot. Similarly, art rejections that were over solely product claims, now canceled, are no longer relevant (i.e. in the 11/21/2008 mailing rejections over Goessl et al., French et al., Timmons et al., & Oka et al., in sections 8, 9, 11 & 15, respectively). She

7. **Claims 41-77 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting** as being unpatentable over claims 85-122 of copending Application No. **10/560,210**.

Although the conflicting claims are not identical, they are not patentably distinct from each other because while limitations are claimed in different orders, the various limitations of the present claims, are also claimed in this copending case, where present independent claim 41 encompasses the process of copending (210)'s independent claim 85, which is narrower in that it requires further coating on the plasma polymerized surface of a "binding entity", which is considered to read on any binding site, with it noted that the intended use of on to which a cell can attach..." is not a positive limitation (i.e. need not occur), so provides no necessary further limitation. Note that copending claim 85's limitation of moving plasma source (or monomer source) &/or substrate relative to one another covers the same options of relative movement as the present independent claim 41. Also note how that N-vinyl pyrrolidone in copending claim 102 is a heterocyclic unsaturated compound.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

8. **Claims 41-42, 44, 51, 54-55, 61, 63, 69-70 & 76-77 are rejected under 35 U.S.C. 102(b)** as being clearly anticipated by **Morra et al.** (5,514,424).

**Morra et al.** is being applied to illustrate the scope of new claim 41's nomenclature for present phraseology, which has pointed out above includes any organic compound monomer as a moving plasma source. Morra et al. teach plasma polymer deposition of a fluorinated polymer on substrates, such as

Art Unit: 1792

high-density polyethylene, where exemplary fluorocarbon monomer employed was perfluoropropene, which the examiner notes has a boiling point of  $-29.4^{\circ}\text{C}$ , thus clearly has vapor pressures within the claimed range at room temperature (abstract; col. 3, lines 1-34 & 65-44 (example 1), particularly further noting the teaching in col. 6, lines 60-61 which states "... due to the more heterogeneous chemical structure of the polymer is produced by plasma polymerization", thus showing a general recognition in the art that plasma polymerization inherently it produces structures that may be called heterogeneous, where the examiner notes that since molecular structure variation may also be considered a physical variation, this heterogeneity is both chemical & physical.

While Morra et al. does not specifically list perfluorohexane, they do specifically teach that the monomers are selected from the group consisting of perfluorinated alkanes or alkenes from 1-10 carbons (column 3, lines 7-15), which is inclusive of perfluorohexane which has 6 carbons. He

9. **Claims 41- 46, 50, 53-54, 63, 68-70 & 74-75** are rejected under 35 U.S.C. **102 (b)** as being clearly anticipated by **Renner et al.** ((DD 94657), see translation).

**Claims 65 & 76-77** are rejected under 35 U.S.C. **103(a)** as being unpatentable over **Renner et al.**

**Renner et al.** teach a plasma polymerization technique, where the substrate, a magnetic storage medium exemplified by disks or tape, is kept in motion during the plasma polymer coating process, and where the composition & degree of polymerization of the deposited polymer coating is changed by control of the deposition process parameters &/or mixing ratio of various monomers, or a monomer & inert gas, so that the coating has different properties at different distances from the substrate surface. In example 1, plasma deposition on magnetic recording media disc substrates is performed at a constant pressure of 5 Torr, with an initial partial pressure of hexamethyldisiloxane of  $10^{-3}$  Torr, which is continuously increased during deposition in order to reduce the degree of polymerization, thus producing a nonuniform deposit. In example 2, a magnetic storage medium in tape form (e.g. substrate would be



Art Unit: 1792

polymeric = plastic) is passed between electrodes in a plasma atmosphere of octamethyltrisiloxane at 0.5 Torr (i.e.  $>0.05$  Torr =  $6.6 \times 10^{-2}$  mb), using two electrode systems of different lengths with plasma being generated at different voltages to effect the taught differentiated plasma polymer deposition. In the translation, besides the examples, also see the 2nd-5th paragraphs on the 2nd page & claims, esp. 1-3.

While the specific examples only employed a single type of monomer compound, i.e. hexamethyldisiloxane or octamethyltrisiloxane, both organosiloxane compounds having saturated hydrocarbon ligands (i.e. may be considered a saturated organic compound & a type of hydrocarbon compound), the generic teachings also indicate that mixtures of various monomers may be employed, thus reading on copolymeric depositions. These teachings are considered suggestive of copolymeric depositions involving at least one organic monomer with at least one hydrocarbon, as suggested use of monomer mixtures would reasonably have been considered with respect to the to exemplified monomers employed with other monomers or each other, such that it would've been obvious to one of ordinary skill in the art via routine experimentation to determine reasonable & effective monomer mixtures given these considerations.

Also note that depositing on tapes, may be considered effectively depositing in tracks or lines of deposition. Plasma polymerization inherently meets the requirement of heterogeneous chemical or physical, such that any plasma polymerized deposition may be considered heterogeneous through its thickness & over its surface.

Note with respect to substrate composition, while magnetic tape medium, as far as the examiner knows are always polymeric, i.e. plastic, the translation does not actually say that the tapes coated are plastic, however it would've alternatively have been obvious to one of ordinary skill in the art to employ conventional compositions for magnetic tapes, i.e. plastics such as PET, as that is what is standardly known to be employed for such purposes.

Art Unit: 1792

While discussion in the translation indicates movement of the substrate with respect to the plasma, which may be considered the monomer source, with indication that the storage medium, i.e. substrate is kept in motion during the plasma polymerization process, it would have alternatively have been obvious to one of ordinary skill in the art that equivalent relative effects would have been produced by moving the plasma source with respect to the substrate, such that this would have been an obvious alternative, dependent on particular shape of the magnetic recording medium desired to be protectively coated.

10. **Claims 41-46, 48, 50, 52, 54-58, 61, 63, 69-70 & 76-77** are rejected under 35 U.S.C. **103(a)** as being unpatentable **Badyal et al.** (6,358,569 B1), in view of **Renner et al.** (discussed above in section 10), and optionally considering **Nomura** (6,022,602). I

**Claims 49-51, 53, 59-60, 62 & 64-66** are rejected under 35 U.S.C. **103(a)** as being unpatentable **Badyal et al.** (6,358,569 B1), in view of **Renner et al.**, as applied in claims 41-46, 48, 50, 52, 54-58, 61, 63 & 76-77, and further in view of **Nomura** (6,022,602).

**Badyal et al.** teach pulsed plasma polymerization of monomers, such as unsaturated-carboxylic acid, or acrylic acid or ethylene oxide or styrene oxide, to deposit on substrates that may be porous or microporous material, such as polyethylene or cellulose, etc., where the coating may be applied such that it is continuous & impervious, or the process may be stopped at an earlier stage such that the apertures in the porous material are not completely filled, dependent on desirability for particular enduse, which is inclusive of uses requiring biocompatible properties. Note that the option of incompletely filling pores on porous material created a plasma polymerize surface that may be considered nonuniform across the surface to a greater degree than the above discussed heterogeneity of plasma polymerized deposits in general. An exemplary procedure discusses plasma polymerization of acrylic acid monomer input into the plasma reactor as a monomer vapor admitted via a needle valve to a pressure of 0.2 mb. Particularly

Art Unit: 1792

see the abstract; col. 1, lines 1-col. 2, lines 5 & 40-58, esp. col. 1, lines 43-54 & 62-col. 2, line 5; col. 3, lines 38-45 & 54-col. 4, lines 12; col. 5, lines 37-41.

Badyal et al. differs from the claims by not discussing if there is any movement of substrate or monomer source during the plasma polymerization process, however **Renner et al.** (discussed section 9), who also discuss plasma polymerization processes, notes the importance of motion between substrate & plasma during the precipitation and polymerization process in order to enhance homogeneity of the polymer as it is being deposited, such that it would've been obvious to one of ordinary skill in the art to similarly employed motion in order to insure homogeneous distribution of the polymer, which effect is considered to be complementary to the above-mentioned ability to deposit such that pores are not completely filled dependent on timing of the process, as it is considered that these two effects would not hinder each other & homogeneous deposit on all raised, i.e. non-pore areas, would have been beneficial for producing desired functionalized composition, thus properties, thereon.

It is further noted that the type of motion employed, would have been expected to be depended on the particular type of porous substrate being treated, with **Nomura** ((602): abstract ; figures, esp. 1; col. 1, lines 15-60; col. 2, lines 32-65; col. 3, lines 38-65; col. 4, lines 35-50; col. 7, lines 15-50; col. 8, lines 65- col. 9, lines 40 & 56-63; col. 10, lines 5-10 & 50-59; col. 12, lines 7-20 & 42-67; col. 13, lines 7-25 for monomers & 26-44+ for more parameters; & examples ) being optionally considered in this respect, due to discussion of plasma polymerization on the interiors of continuous tubing, such as may be used for medical devices like catheters, vascular grafts, etc., where the tubing is passed through a plasma polymerization zone, thus is consistent with the type of movement taught in the secondary reference of Renner et al. for continuous tape substrates, thus further providing for the obviousness of such movement. It is also taught that such tubing, which is porous, but has low porosity, may require their techniques of having periodic sequential openings to allow input of monomer gases to the interior, or their background discussion that it was known to perform such plasma polymerization on sufficiently porous tubing.

Art Unit: 1792

Nomura (602)'s technique provides for movement of the substrate pass the monomer source, so as to provide input of monomer gas into the tubing interior, where it is desired to be plasma polymerized, thus indicates means of effectively producing plasma polymerization processes as discussed in Badyal et al. for interiors of tubing, plus providing motivation to do so on tubular substrates. With respect to particular deposition materials, Nomura (602) provides teachings of using monomer vapors or mixtures of monomer vapors, with further discussion of monomers that may effectively be deposited via plasma polymerization processes on such surfaces, inclusive of tetrafluoroethylene to create polyfluorocarbon surfaces, & siloxanes such as hexamethyldisiloxane to create polysiloxane deposits, alkanes & alkenes, acrylic acid, allylamine, benzene, styrene, diaminocyclohexane, etc., such that it would've been further obvious to one of ordinary skill to deposit such monomers on porous surfaces via plasma polymerization as discussed in Badyal et al., in view of Renner et al. as discussed above, given their effectiveness in analogous processing has been demonstrated, as has their desirability for enduse is on analogous types of substrate material, especially with respect to deposition of fluorocarbon as Badyal et al. teaches the desirability of sequentially fluorinating the surface, thus Nomura provides an option or means for doing so with less steps.

11. **Claims 41-66, 68-70, 74 & 75-77** are rejected under 35 U.S.C. **103(a)** as being unpatentable **Muguruma et al.** (7,087,149 B1  $\equiv$  WO 00/63685), in view of **Renner et al.** (see section 9 above).

**Muguruma et al.** teach making a biosensor structure, where a preferred embodiment has 2 plasma polymerize layers, with an intervening patterned electrode layer, such that the resultant structure may be considered to be nonuniform, especially considering that chemically different plasma polymerized deposits count as nonuniform, in that the surface plasma polymer is not planar & does not have the same thickness over the whole surface, but the thickness changes where it crosses the electrode pattern having lines of thicker polymer at the edges of the electrode pattern. Also, where the first plasma polymer is

Art Unit: 1792

directly overlaid by the second deposited plasma polymer, there are at least two plasma polymers formed on the surface, such at the composition where they interface may be considered different, providing a compositional nonuniformity. The surface plasma polymer provides binding sites for biomolecules, such as enzymes, where the overall structure is used for analysis purposes. With respect to plasma polymer deposition processes, Muguruma et al. teach that the plasma polymers may contain one or more functional groups inclusive of acids (-COOH), hydroxy (-OH), amines, -CH=CH<sub>2</sub>, ethylene oxide groups, etc., where such functional groups may be supplied in single monomer gases or mixtures of monomers, & include such compounds as allylamine, methanol, acetic acid, acrylic acid, hexamethyldisiloxane, hexamethylcyclotrisilazane, etc. Note that these functional groups are also provide "nonuniform characteristics" being heterogeneous chemical variations. Substrate boards may include glass or plastic or silicon or cellulose. Muguruma et al. teach that plasma polymerization conditions can be appropriately set by one of ordinary skill in the art dependent on monomer gas employed, where exemplary pressures for gases such as hexamethyldisiloxane or acetonitrile monomers include pressures of 1-10 Pa, i.e. 0.1-0.01 mbar. In Muguruma et al., particularly see in the US patent (considered to provide the translation for the Japanese PCT document), the abstract; figures 1-2; col. 1, lines 10-25+; col. 3, lines 15-32 & 66-col. 4, lines 20 & 38-col. 5, lines 30+; col. 6, lines 31-67; col. 7, lines 7-22; col. 8, lines 6-50; & examples, such as example 1 on cols. 11-12.

Muguruma et al. differ by not discussing whether or not movement occurs with respect to substrate & monomer source (or plasma), however as discussed above the movement of the monomers in the plasma now counts as movement of the plasma source for the claims has written, and furthermore Renner et al. as discussed above in sections 9 & 10, in provides reasons why such relative movement during plasma polymerization is desirable, thus it would've been obvious to one of ordinary skill in the art to employ such movements in order to optimize their plasma polymer deposition & create more effective biosensors due to effective distribution of functional groups on the surface.

Art Unit: 1792

12. **Claims 41-51, 54-56, 58-66, 69-70 & 76-77** are rejected under 35 U.S.C. **102(b)** as being clearly anticipated by **Nomura et al.** (5,843,789).

**Nomura et al.** ((789) abstract; figures 1-2; col. 3, lines 27-57; col. 4, lines 10-20; col. 5, lines 10-60; col. 6, lines 5-50; col. 7, lines 7-34 & 50-col. 8, lines 25 & 55-65; col. 9, lines 1-10, 22-40 & 55-65; col. 10, lines 12-50; and examples & claims) teach plasma polymerization deposition of claimed monomers on porous substrates that may be rotated on a disk so as to pass through a plasma formed with those monomers, where the coating deposited on the porous substrate (polyethylene, polypropylene, polyvinylchloride, etc.) does not clog or fill the pores, thus is considered to be nonuniform across the surface on the order of the size of the pores as well as due to the plasma polymerization employed. This improved porous material is taught to be used for blotting analysis of proteinaceous & genomic matter, or in immunoassay analysis.

13. **Claims 41-46, 49-51, 53-56, 58-67, 69-73 & 76-77** are rejected under 35 U.S.C. **102(b)** as being clearly anticipated by **Hu et al.** (5,463,010).

In **Hu et al.** (010), see the abstract; figures, especially 1-2; col. 1, lines 7-15+; col. 3, lines 48-col. 4, lines 18, 33-37, 42-67+; col. 6, lines 13-col. 7, lines 35; col. 8, lines 5-40 & 46-col. 11, line 3; & examples e.g. Ex.2 & 3 on cols. 11-12, which teach plasma polymerization using only a single type of monomer of aliphatic hydrocyclosiloxane, or using mixtures of these siloxane monomers with comonomer(s) inclusive of fluorocarbons or organo based monomers or functional terminated monomers (e.g. ethylene, allylamine, trimethyl silyl allylamine, hydrocarbons, unsaturated amines...), to affect polymer or copolymer depositions via RF plasma onto substrates inclusive of silicon catheters, metal wire and fibers, such as polypropylene microporous hollow fibers, to produce "membranes" thereon. Taught enduses include biocompatible surfaces in biomedical devices. Note "aliphatic" includes both saturated & unsaturated hydrocarbons, i.e. alkanes & alkene, and the hydrocyclicsiloxanes are heterocyclic compounds. Since the deposit the coating is described as a "membranes", it is considered an indication

Art Unit: 1792

that the plasma polymer coated substrate remains microporous, thus may be considered nonuniformly coated across the surface with respect to the microporous structure, i.e. the pores aren't plugged.

Also see figure 20 which shows a 2-phase morphology of TMCTS plasma polymerized membrane on polypropylene where the plasma polymerization as seen in the SEM picture shows but are spatially separated and made of plasma deposited phases of plasma polymer, which given applicants current phrasing which encompasses both macrostructure & microstructure both chemically and physically for heterogeneous or nonuniformity characteristics

14. **Claim 63** is rejected under 35 U.S.C. **112**, **first** paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

It is noted that new **claim 63** would be the same as original claim 24, **except** it includes an additional condition that this claimed vapor pressure range is "at room temperature". Review of the specification shows that page 10, lines 5-8, included the same information as present in original claim 24, and does not provide support for the additional information added in the new claim. As applicants have provided no support for this new limitation in the original specification, nor provided any reasoning why this previously undisclosed requirement is inherent in the original disclosure, it must be considered to constitute **New Matter**.

15. **Other art of interest, previously cited** included: Kurosawa et al. ("Absorption of Anti-Human IgG to Plasma Polymerized Allylamine Film Formed on Silver Plate") directed to further plasma polymerized depositions used for assay purposes; Timmons et al. (5,876,753 & 2003/0113477 A1 & 2002/0004104 A1) which contain teachings analogous to those found in Timmons (506) discussed above.

Kolluri et al. (6,277,449 B1) provide teachings substantially similar to that of Muguruma et al. or Badyal et al., for producing plasma polymerize coatings with binding sites for further depositions, where

Art Unit: 1792

the nonuniformity in the deposits of Kolluri et al. may be considered to be on the molecular level, such as illustrated in various functionalize surfaces, for example the resulting surface in figure 37 has three different functional groups thereon, thus may be considered to be nonuniform across the plasma polymerized surface in this respect, however such a rejection is redundant at this time.

16. Applicant's arguments filed 2/23/2009 & discussed above have been fully considered but they are not persuasive.

Applicant's arguments are not commensurate with their claim language, which they have insured cover any kind of nonuniformity from macroscopic down to molecular structure.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. **Any inquiry** concerning this communication or earlier communications from the examiner should be directed to **Marianne L. Padgett** whose telephone number is **(571) 272-1425**. The examiner can normally be reached on M-F from about 9:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.



Art Unit: 1792

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Marianne L. Padgett/  
Primary Examiner, Art Unit 1792

MLP/dictation software

6/20/2009